

#### ABSTRACT OF THE DISCLOSURE

A high recovery sonic gas valve design with the inlet flow entering transverse and orthogonal to the outlet flow is presented. The configuration cancels the effects of the inlet flow entering orthogonal to the axis of the nozzle and diffuser. The inlet passage is curved in a manner to let the flow enter along the centerline of the nozzle and diffuser. The nozzle is contoured and provides upstream flow impedance. The diffuser is contoured with the area gradient varying from a low positive value at the nozzle throat then to a maximum value and finally dropping off significantly to near zero prior to the nozzle exit. The diffuser is nearly cylindrical and may extend past the valve outlet flange and protrude into adjacent piping.